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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LAVILLA, MICHAEL E

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,965	Applicant(s) PFEIFENBRING ET AL.	
	Examiner MICHAEL LAVILLA	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☒ Claim(s) 8-12 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060515</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:
2. At page 6, line 11 of the Specification, a purported description of the content of document DE-C- 1 386 645 is provided. However, this document does not describe cooling elements. Rather, the document describes a wire rope hoist with integrated safety device. The document being described may be GB 1 386 645.
3. Appropriate correction is required.

Information Disclosure Statement

4. Reference DE 1 386 645, listed on the IDS 1449 filed on 15 May 2006, is crossed-out on the Examiner-initialed and signed copy attached hereto because this reference does not pertain to cooling elements, but rather to a wire rope hoist with integrated safety device, and so it appears to have no relevance to the claimed subject matter.

Claim Objections

5. Claims 8-12 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from a multiple dependent claim as these claims do. See MPEP § 608.01(n). Accordingly, the claims 8-12 have not been further treated on the merits.

Claim Rejections - 35 USC § 112

Art Unit: 1794

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:
7. The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
8. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
9. Regarding Claims 1 and 5, it is unclear what is meant by the phrase "in particular". It is unclear whether the claimed use is limited to this particular use or not necessarily.
10. Regarding Claim 1, line 3, it is unclear what is meant by the phrase "consisting of". Since the claim layer describes an electrolytic coating, which presumably may not be cast copper or low alloyed copper alloy at least in part since claim 2 limits the electrolytic coating to nickel, it is unclear how the cooling element can be said to consist of cast copper or a low-alloyed copper alloy, i.e., be only made of these alternative materials. It is unclear what portion of the claimed cooling element is to be limited to the claimed material of cast copper or a low-alloyed copper alloy. Regarding Claim 1, it is unclear what is meant by the phrase "with coolant channels which comprise tubes cast in the copper or the copper alloy." Does this phrase mean that the coolant channels are made of the same material as the "cast copper or a low-alloy copper alloy" or that the coolant channels need not be made of the same material but must be made of one of the alternatives nevertheless?

11. Regarding Claims 3, 5, and 7, it is unclear what is meant by the term "preferably."

It is unclear whether the claimed preference is a necessary limitation or whether the claim scope can be defined by ignoring the preference.

12. Regarding Claim 4, it is unclear whether the stated copper and nickel percentages are weight percentages, or some other percentage basis, such as atomic.

13. Regarding Claim 5, it is unclear what is the significance, if any, of the reference to "tubes" everywhere in the claim except in step (a) which refers to a singular "tube". Should the claim always use the plural form, always use the form of "at least one tube", or is the presented form correct? This indefiniteness renders the use of the term "tubes" in Claims 6 and 7 indefinite since there may be uncertainty as to antecedent basis for these claims.

Claim Rejections - 35 USC § 102/103

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

15. A person shall be entitled to a patent unless –

16. (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which

Art Unit: 1794

said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 1, 5, and 6 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Outokumpu Oy GB 1 386

645. Outokumpu Oy teaches copper cooling element having copper pipe channels, wherein the copper pipe channels may be coated with molten layer before being immersed in molten copper casting material. See Outokumpu Oy (page 2, lines 26-49 and 74-124; page 3, lines 3-26 and 124-128; page 4, lines 28-48). While Outokumpu Oy may not teach that the molten layer is formed as an electrolytic coating, the cooling element of Outokumpu Oy having pipes coated with molten layer prior to being immersed in the casting material would be expected to be chemically and structurally indistinguishable from those claimed, i.e., to be the same as or substantially the same as those claimed, in the absence of evidence to the contrary. Regarding Claim 5, Outokumpu Oy teaches step (a) when Outokumpu Oy teaches using prefabricated pipes. Outokumpu Oy teaches step (b) when Outokumpu Oy teaches casting the molten copper within the mold followed by immersing the pipes while cooling the

Art Unit: 1794

pipe interiors. The claim phrase “around the tubes within a casting mold” is interpreted to describe the result of the casting step, rather than a requirement that casting be performed at the moment when tubes are present in the casting mold. Outokumpu Oy teaches step (c) when Outokumpu Oy teaches that the melt, following immersion step, is cooled and solidified. Regarding Claim 6, Outokumpu Oy teaches coating the formed piping with the molten layer after the formed piping is formed.

Claim Rejections - 35 USC § 103

20. Claims 1, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Outokumpu Oy GB 1 386 645. Outokumpu Oy teaches copper cooling element having copper pipe channels, wherein the copper pipe channels may be coated with molten layer before being immersed in molten copper casting material. See Outokumpu Oy (page 2, lines 26-49 and 74-124; page 3, lines 3-26 and 124-128; page 4, lines 28-48). Outokumpu Oy teaches that piping may be electrolytically coated when the piping material and cooling element material are different and that copper material is an effective cooling element material. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the cooling element from cast copper due to its favorable heat transport properties as suggested by Outokumpu Oy. It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the piping material from a different copper alloy material since Outokumpu Oy

suggests that configurations with different materials may be desirable and to form a pre-immersion electrolytic layer in order to facilitate bonding as suggested by Outokumpu Oy. Claim 1 may be interpreted as permitting the cooling element and tube to be different copper materials. Regarding Claim 5, Outokumpu Oy teaches step (a) when Outokumpu Oy teaches using prefabricated pipes.

Outokumpu Oy teaches step (b) when Outokumpu Oy teaches casting the molten copper within the mold followed by immersing the pipes while cooling the pipe interiors. The claim phrase “around the tubes within a casting mold” is interpreted to describe the result of the casting step, rather than a requirement that casting be performed at the moment when tubes are present in the casting mold. Outokumpu Oy teaches step (c) when Outokumpu Oy teaches that the melt, following immersion step, is cooled and solidified. Regarding Claim 6, Outokumpu Oy teaches coating the formed piping with the molten layer after the formed piping is formed.

21. Claims 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Outokumpu Oy GB 1 386 645 in view of MacRae et al. USPN 6,280,681.

Regarding Claims 5 and 6, Outokumpu Oy is relied upon as set forth above in the 102/103 rejection and the section 103 rejection. In the event that the method of Outokumpu Oy cannot be said to cast copper around tubes within a mold, MacRae teaches forming cooling elements in this manner as a conventional technique of forming such articles. See MacRae (col. 2, line 35 through col. 6, line 41). It would have been obvious to one of ordinary skill in the art at the time

Art Unit: 1794

of the invention to fabricate the cooling element of Outokumpu Oy by casting copper at the moment when the tubes are present in the mold as opposed to introducing tubes to the mold after copper has been cast therein because MacRae suggests that forming such cooling elements in this manner is a conventional alternative method of making such articles. Regarding Claim 3, Outokumpu Oy is relied upon as set forth above in the 102/103 rejection and the section 103 rejection. Outokumpu Oy does not teach the claimed layer thickness. MacRae teaches that the pipe wall thickness that melts is on the order of 1 mm. See MacRae et al. (col. 6, lines 27-28). It would have been obvious to one of ordinary skill in the art at the time of the invention to vary the thickness of the coating layer in order to optimize adhesion and to utilize thicknesses from near zero thickness to those on the order of pipe thickness, which would be expected to be at least in the millimeter range, since such thicknesses would constitute a coating as the term is understood to mean. This range includes the claimed range. Regarding Claim 4, Outokumpu Oy is relied upon as set forth above in the 102/103 rejection. Outokumpu Oy does not teach the claimed alloy. MacRae teaches forming pipes from the claimed alloy in combination with a specific casting alloy as this combination has favorable thermal cycling properties. See MacRae et al. (col. 6, line 45 through col. 8, line 44). It would have been obvious to one of ordinary skill in the art at the time of the invention to fabricate the pipes of the cooling element of Outokumpu Oy from the pipe alloy of MacRae and the cooling element from the casting alloy of

Art Unit: 1794

MacRae in order to obtain a cooling element having favorable thermal cycling properties. The claimed coating on the pipes is suggested by the combination for the reasons previously addressed since Outokumpu Oy suggests molten layer formed from the casting material, a copper material.

22. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Outokumpu Oy GB 1 386 645 in view of MacRae et al. USPN 6,280,681 in further view of Kuo USPN 5,441,763. Outokumpu Oy is relied upon as set forth above in the section 103 rejection over Outokumpu Oy in view of MacRae. Outokumpu Oy does not teach the claimed mechanical cleaning. MacRae teaches that pipe surface should be cleaned prior to casting to facilitate fusion bonding. See MacRae (col. 7, line 55-59). Kuo teaches that mechanical blasting, i.e., shot peening, is effective in this regard. See Kuo (Abstract; col. 2, lines 21-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to clean the surface by any conventional method including mechanical blasting methods as taught by Kuo, prior to applying another material thereto, including the claimed electrolytic coating, so as to facilitate subsequent bonding of layers.

Allowable Subject Matter

23. Claim 2 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Art Unit: 1794

24. The subject matter of Claim 2 is not taught or suggested by the reviewed prior art. Particularly, for example, Outokumpu Oy GB 1 386 645 does not teach or suggest the combination of a cast copper or low-alloyed copper cooling element, cast or alloyed copper tube, and nickel electrodeposited layer on the tube in the claimed context of Claim 2.

Conclusion

25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL LAVILLA whose telephone number is (571)272-1539. The examiner can normally be reached on Monday through Friday.

26. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil, can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

27. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

**/Michael La Villa/
Michael La Villa
Primary Patent Examiner, Art Unit 1794
24 September 2009**